ISSN XXXX XXXX © 2017 IJESC

Research Article Volume 7 Issue No.10

Understanding the Concept of Quality and Quality Management on a Construction Site

Tejas Kulkarni[1], Pravin Minde[2]
Student[1], Professor[2]
Department of Civil Engineering
SPPU, Padmabhooshan Vasantdada Patil Institute of Technology, Bavdhan, Pune, Maharashtra, India

Abstract:
The law of survival of fittest plays an important role in today's market due to the increase in competition. The pressure on construction enterprises for the market and competitors has increased due to the increasing requirements of customers towards quality assurance which require improvements in internal quality and keep close eye on quality control. The economic benefit largely depends on quality control in a business. Construction companies should pay more attention towards the principle of quality, and insist on quality standards.

Keywords: Quality, Quality Control, Quality Assurance, Quality Management.

I. INTRODUCTION

Quality Control is very essential to build durable and efficient structures in the construction industry. Quality Control and Quality Assurance are very important to maintain the quality on site. Total Quality Management (TQM) is the concept widely used in the manufacturing industry but it also shows its importance in the construction industry. The strength of the structure is a random variable, it is necessary to exercise good quality control to minimise its variability.

II. NEED FOR QUALITY MANAGEMENT

The need for quality management in construction is now widely accepted. Implementing the quality standard elements in the field, practically there will be lots of hurdles and most of the employers are very much interested and indulging themselves in this process but they don't get a proper way or benchmark to fix the standards. This study aims at analyzing the significance and importance of construction firms regarding implementation of Total Quality Management at all the levels of the Projects. The problems and conclusions are weighed and assessed respectively. Today, India is the second fastest growing economy in the world. The Indian construction industry is an integral part of the economy and a conduit for a substantial part of its development investment, is poised for growth on account of industrialization, urbanization, economic development and people's rising expectations for improved quality of living. To be competitive in today's market, it is essential for construction companies to provide more consistent quality and value to their owners/customers. Now it is the time to place behind the old adversarial approach to managing construction work. It is time to develop better and more direct relationships with our owners/customers, to initiate more teamwork at the jobsite, and to produce better quality work. Such goals demand that a continuous improvement process to be established within the company. Recently construction companies have increasingly adopted TQM as an initiative to solve quality problems and to meet the needs of the final customer. Many construction companies in the US, Singapore, UK, and other European countries have been using TQM successfully for a number of years and reaping rich rewards in improved client, consultant, and supplier relations, reduced "cost of quality", on time and within budget project completions, and a well informed and highly motivated team of staff. In order to comprehend the need for improvement in the construction industry and to better manage our projects and construction companies, we need to look for a method to do so. Construction managers need to improve their performance. Construction costs are becoming far too high. Construction project management is more difficult than it should be. When turnaround at the end of a project becomes a gut-wrenching experience with unnecessary disputes (which must be settled) that arise due to insufficient quality or indifference to quality, settlement by negotiation, arbitration, or even litigation imposes a serious drain on the financial resources of a company and limits profit potential. To be competitive in today's market, it is essential for construction companies to provide more consistent quality and value to their owners/ customers. Now is the time to place behind us the old adversarial approach to managing construction work. It is time to develop better and more direct relationships with our owners/customers, to initiate more teamwork at the jobsite, and to produce better quality work.

III. GENERAL CONCEPTS OF QUALITY

A. What is quality?

Quality is defined as 'fitness to purpose', i.e. in terms of Construction it is providing a building which provides an appropriate quality for the purpose for which it is intended. The price to be paid for a building is a reflection of the expectations of quality.

B. Quality Assurance

QA is a way of preventing mistakes or defects in manufactured products & avoiding problems when delivering solutions or services to customers. QA is applied to physical products in pre-production to verify what will be made meets specifications & requirements & during manufacturing production runs by validating lot samples meet specified quality control. QA is also applied to software to verify that

features & functionality meet business objectives & that code is relatively bug free prior to shipping or releasing new software products & versions. Two principle included in quality assurance are: "Fit for Purpose", the product should be suitable for the intended purpose & "Right first time", mistakes should be eliminated. QA includes management of the quality of raw materials, assemblies, products & components, services related to production & management, production & inspection. Quality Assurance engineer would develop a quality plan based on customer requirements and the QC engineer would monitor & ensure that all requirement of the quality plan are met by the product during manufacturing. A Quality Control engineer may be involved in developing, packing & shipping requirement or be involved in providing quality specifications to purchasing. The QC engineer would only be focused on making sure product meets the requirements of quality plan as set by Quality Assurance. Quality Assurance is the process of identifying or deciding all the quality requirements for a projects, identifying existing quality documents such as codes, specification etc. That is relevant to quality requirements of the project & making them available for use, preparation of new project quality plan or quality assurance plan, inspection test paln, job procedures, project specifications etc.

C. Quality Control

Quality control has many definitions. W.E. Deming, one of the founders of the philosophy and application of statistical control of quality, defines it as follows: "Inspection with the aim of finding the bad ones and throwing them out is too late, ineffective, and costly. Quality comes not from inspection but from improvement of the process." Quality control is a formal systematic process designed to ensure that expected quality standards are achieved during scoring, equating, and reporting of test scores. This definition in hand, we still have to define the "ingredients"—the expected standards and the detailed processes of quality control. QC plays an important role in exactly elaborating, defining and refining quality specifications and appropriate testing methods. There is a long-established approach to compiling the specifications of pharmaceutical products employing "official" methods including pharmacopoeia methods, validated analytical procedures provided by the manufacturer and approved by the relevant government or validated analytical procedures developed by the laboratory. Important elements to be checked during a quality control are as follows.

- To produce a building that satisfies the client.
- To produce a building where quality is related to the price.
- To produce a building in which sufficient time is allowed to obtain the desired quality.

IV. TOTAL QUALITY MANAGEMENT

A. Introduction

Today, India is the second fastest growing economy in the world. The Indian construction industry is an integral part of the economy and a conduit for a substantial part of its development investment, is poised for growth on account of industrialization, urbanization, economic development and people's rising expectations for improved quality of living. To be competitive in today's market, it is essential for construction companies to provide more consistent quality and value to their owners/customers. Now it is the time to place behind the old adversarial approach to managing construction work. It is time to develop better and more direct relationships with our owners/customers, to initiate more teamwork at the jobsite, and to produce better quality work. Such goals demand that a continuous improvement process to be established within the company. Recently construction companies have increasingly adopted TQM as an initiative to solve quality problems and to meet the needs of the final customer. Many construction companies in the US, Singapore, UK, and other European countries have been using TQM successfully for a number of years and reaping rich rewards in improved client, consultant, and supplier relations, reduced "cost of quality", on time and within budget project completions, and a well informed and highly motivated team of staff.

B. Principles of TQM

The principles of Total Quality Management (TQM) provide a means for achieving quality in the construction process. The improvement of quality requires that every member of the organization embrace the principles of continuous improvement. Total Quality Management is a customer-oriented approach that stresses the effective use of people. Total Quality management also emphasizes the application of quantitative methods and process improvement techniques to continually improve products and services. Total Quality Management requires a cultural change in the organization. The leadership and management of the organization must demonstrate a sincere commitment to continuous improvement. They must foster a working environment which capitalizes on the creativity and ingenuity of employees. The TQM organization focuses on the needs and expectations of customers, both internal and external. Emphasis is placed on prevention of the causes of defects rather than the correction of defects. The organization must foster a long-term relationship with suppliers based on mutual trust and respect. Total Quality Management encourages innovation.

C. Aims of TQM

The International Academy of the American Society for Quality has defined TQM as: The management approach of an organization centered on quality, based on the participation of all of its members and aiming at long-term success through customer satisfaction and benefits to all members of the organization and to society. The aims of TQM are to achieve customer satisfaction, cost effectiveness, and defect free work through a relentless pursuit of the "war on waste." The customer will be satisfied only if the product has a very low rate of defects (literally none or zero) and is competitive in price with offerings from other suppliers. TQM achieves customer satisfaction through focusing on process improvement, customer and supplier involvement, teamwork, training, and education. TQM is a culture advocating a total commitment to customer satisfaction, through continuous improvement and innovation in all aspects of the business. The customer, in the ideal culture, does not mean only the final recipient of the organization's end product or services. The "customer" is also every individual or department and stakeholder within the organization.

V. CONCLUSION

Effective quality control ensures conformance of constructed structure with design intentions, which in turn guarantees structural safety. Quality control is an important aspect of the construction process that ensures that the materials with design properties are actually delivered and used at the site. Quality Management ensures quality is maintained at all levels in an

organization. Quality management plays an important role in maintaining the quality and meet customer needs.

VI. FUTURE SCOPE

This paper reviews the aspects of quality and quality management, for further study quality circle formations and tool box talks can be studied. Also quality management on site can be done by using quality control tools such as six sigma.

VII. ACKNOWLEDGEMENT

Author would specially like to thanks supervisor Prof. Pravin Minde for his valuable inputs from time to time. Author would like to thank Dr. A.B. More [Head of Civil Engineering Department, P.V.P.I.T. Pune] and Prof. P.R. Minde [P.G. Coordinator Civil Engineering Department, P.V.P.I.T. Pune] for their guidance and reviews.

VIII. REFERENCES

[1]. "CONCRETE TECHNOLOGY", M. S. Shetty.

[2]. Published by RMCMA (2008), Guidelines on Quality Control & Quality Assurance of RMC.

[3]. MRDP (October 2012), Construction Quality Control & Quality Assurance.

[4]. Ahmed S Aga, Total Quality Management in Construction.

[5]. C ARUM, International Association of African Researchers and Reviewers (IAARR) (2008), QUALITY CONTROL AND SAFETY OF STRUCTURAL CONCRETE BUILDINGS.